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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/670,587

09/25/2003

Jinru Bian

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7481

61611

7590

09/05/2006

ROHM AND HAAS ELECTRONIC MATERIALS  
CMP HOLDINGS, INC.  
451 BELLEVUE ROAD  
NEWARK, DE 19713

EXAMINER

WEBB, GREGORY E

ART UNIT

PAPER NUMBER

1751

DATE MAILED: 09/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/670,587

**Applicant(s)**

BIAN, JINRU

**Examiner**

Gregory E. Webb

**Art Unit**

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

1. The following is in response to the applicant's timely filing of the RCE dated 6/22/06.
2. Applicant's arguments filed 5/18/06 and 6/22/06 have been fully considered but they are not wholly persuasive.
3. The examiner agrees to remove 112 2nd paragraph rejections based on the applicant's amendments to the claims.
4. Furthermore, the examiner withdraws rejections Wang et al, Avanzino, Fang, Dewhurst, and Takagi based on the applicant's amendments and arguments.
5. Concerning the Rothgery reference, the examiner disagrees with the applicant's arguments. Rothgery teaches compositions suitable for protecting metals. The applicant's own invention is also concerned with protecting metals from corrosion. For example instant claim 5 requires 0-6 percent inhibitor. Furthermore, as the applicant's claims use the transitional phrase "comprising" it is not clear that the specific compounds recited in claim 1 function as the polishing agent or do they function as the corrosion inhibitor. As the composition defined in claim 1 may contain multiple compounds including a corrosion inhibitor, the composition of Rothgery clearly read on a composition which inhibits corrosion. Therefore, these rejections are maintained.
6. Concerning Wojtczak, the applicant admits that Wojczak teaches cleaning composition. It is known that cleaning composition remove substance from a surface. It is also known that polishing composition remove substances from a surface. Furthermore, both Wojczak and the

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instant invention are concerned with metal corrosion. Therefore, the examiner argues that these are indeed analogous arts.

***Claim Rejections - 35 USC § 102***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Manke, Steven A. (US4479917).

Concerning the preferred imines, Manke, Steven A. teaches the following:

Guanidine hydrochloride (57 g, 1.67 mole) was placed in 500 ml of ethanol and 64% hydrazine solution (157 g, 3.14 mole) was added and the mixture refluxed 4 hours. On cooling the product formed. It was filtered, washed and dried giving 71.5 g of crude TAGC. Recrystallization from water left 61.8 g of product. (*emphasis added*)

Concerning the preferred hydrazine and the hydrazide, Manke, Steven A. teaches the following:

The rate of dissolved oxygen disappearance was observed on a YSI meter and recorded on a strip chart. The percent oxygen removed after one minute and after eight minutes was reported. This experiment was repeated, with other known oxygen-scavengers, namely, **carbohydrazide** catalyzed with hydroquinone and **carbohydrazide** catalyzed with both hydroquinone and a Co-EDTA complex. These results are shown in Table I, below. (*emphasis added*)

Concerning the hydrazine, Manke, Steven A. teaches the following:

Hydrazine, with or without one or more catalysts, has long been used as an oxygen-scavenger to remove dissolved oxygen in liquid systems such as boilers and hot water heating systems. However, **hydrazine** is a liquid with appreciable vapor pressure even at ambient temperatures and in aqueous solutions. For example, when an aqueous solution containing about 35% by weight N.sub.2 H.sub.4 is allowed to equilibrate with its vapor in a closed space, there may be up to 500 parts by volume per million parts of air in the vapor space over the solution. Moreover, **hydrazine** is toxic to humans by skin contact and by inhalation. The inhalation toxicity may be aggravated by the vapor pressure of **hydrazine**, depending upon the use. Accordingly, precautions should be taken in the workplace to obviate the possibilities of skin contact and inhalation of **hydrazine**. Furthermore, the **hydrazine**-oxygen reaction is very slow at low operating temperatures such as room temperature. In those cases, one or more catalysts must be added to the system with the **hydrazine**. (*emphasis added*)

Concerning the guanidine, Manke, Steven A. teaches the following:

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In one preferred embodiment, the organometallic complex, the quinone compound, and the aminoguanidine compound may be combined in one step prior to use of the resulting composition as an oxygen-scavenger, or the three components may be added separately or in any suitable combination to the fluid in the system to be treated. As alternatives to combining the organometallic complex and the quinone compound with the aminoguanidine compound either before or after being added to the fluidic corrosive environment to be treated, other approaches may advantageously be used. In one preferred embodiment, the organic ligand may be dissolved in an aminoguanidine compound solution and the cobaltous or manganous hydroxide, either in solid or suspension form, may subsequently be combined with the organic ligand-aminoguanidine compound solution, either before or after the organic ligand-aminoguanidine compound solution is added to the fluidic system to be treated, and the quinone compound may be added at any time. (*emphasis added*)

8.

Claims 1, 3-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Petrovich, Vojislav (US3951786).

Concerning the preferred hydrazine, hydrazine, guanidine, hydrazide, semicarbazide, claimed intended use and the claimed substrate, Petrovich, Vojislav teaches the following:

1. An improved method of beneficiating ores and minerals selected from the group of oxide ores and minerals of iron, antimony, cerium, yttrium, thorium, titanium, vanadium, niobium, **tantalum**, chromium, wolfram, and uranium by a froth flotation process to produce a froth concentrate of desired metal values, which improvement comprises effecting froth flotation of the ore by treating the comminuted ore of the mineral slurry with organic nitrogen compounds selected from the group consisting of **hydrazine**, hydroxylamine, carbamide, acetamide, oxamide, **guanidine**, **semicarbazide**, **carbohydrazide**, ethylene diamine decomposing said compounds in the presence of hypochlorous acid or a hypochlorite in a slightly acid pulp of mineral slurry (which compounds act as oxidizing agent-vehicle by self destruction) to liberate elemental nitrogen which takes part in an electron transfer reaction of oxidizing the metal at the mineral surface of the mineral particles to be floated adding an effective amount of an olefine alcohol or olefine glycol collector, said alcohols or glycols having from 5-15 carbon atoms, said oxidized metal reacting with the collector at its double bond; and recovering a froth concentrate relatively rich in the desired metal value to leave the tailings relatively poor in the desired metal values. (*emphasis added*)

9.

Claims 1, 3-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Bernhard, David (US20020065204).

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Concerning the preferred imines, guanidine and the tetramethylguanidine, Wojtczak teaches the following:

9. The method of claim 1, wherein said nitrogen-containing carboxyl acid or imine comprises a compound selected from the group consisting of: iminodiacetic acid (IDA) glycine nitrilotriacetic acid (NTA) 1,1,3,-**tetramethylguanidine** (TMG)  $\text{CH.sub.3C(.dbd.NCH.sub.2CH.sub.2OH)CH.sub.2C(O)N(CH.sub.3)2}$   $\text{CH.sub.3C(.dbd.NCH.sub.2CH.sub.2OCH.sub.2CH.sub.2OH)C-H.sub.2C(O)N(CH.sub.3).sub.2}$   $\text{CH.sub.3C(.dbd.NH)CH.sub.2C(O)CH.sub.3}$   $\text{(CH.sub.3CH.sub.2).sub.2NC(.dbd.NH)N(CH.sub.3CH.sub.2).sub.2}$   $\text{HOOCCH.sub.2N(CH.sub.3).sub.2}$   $\text{HOOCCH.sub.2N(CH.sub.3)CH.sub.2COOH.}$  (*emphasis added*)

Concerning the imine, Wojtczak teaches the following:

4. The method of claim 1 wherein said nitrogen-containing carboxylic acid or **imine** comprises a compound selected from the group consisting of: (*emphasis added*)

Concerning the claimed substrate, Wojtczak teaches the following:

[0011] The present invention relates to **semiconductor** wafer cleaning formulations having utility for cleaning of **semiconductor** wafers, e.g., in post plasma ashing **semiconductor** fabrication. (*emphasis added*)

10.

Claims 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee, Kang-Hua (US6436834).

Concerning the preferred hydrazine, guanidine, hydrazide and the semicarbazide, Lee, Kang-Hua teaches the following:

When applied to different processes, the chemical-mechanical abrasive composition of the invention can be formulated to have a desired constitution by altering the species and concentration of the abrasion accelerator or the amount of the abrasive particles. The abrasion accelerators which are suitable or use in the invention may include, for example, methyl glycinate, glycineamide, aminoguanidine, semicarbazide, guanidine, urea, formamidine, acetamidine, formamide, acetamide, formyl **hydrazide**, acetylhydrazide, ethyl glycinate, methyl carbazate, ethyl carbazate, methyl carbamate, or ethyl carbamate, or an acid-addition salt thereof, such as the hydrochloride, nitrate, carbonate, or sulfate salt thereof, or a derivative with a similar structure thereof, or a mixture of two or more of the foregoing compounds. Preferably, the abrasion accelerator is selected from the group consisting of methyl glycinate hydrochloride, glycineamide hydrochloride, aminoguanidine carbonate, **semicarbazide hydrochloride**, **guanidine** carbonate, and a mixture thereof. (*emphasis added*)

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Concerning the hydrazine, formamidine and the acetamidine, Lee, Kang-Hua teaches the following:

8. A composition according to claim 1 wherein said abrasion accelerator is selected from the group consisting of methyl glycinate, glycinamide, aminoguanidine, semicarbazide, guanidine, urea, **formamidine**, **acetamidine**, formamide, acetamide, formyl **hydrazine**, acethydrazide, ethyl glycinate, methyl carbazate, ethyl carbazate, methyl carbamate, ethyl carbamate, an acid-addition salt thereof and mixtures thereof. (*emphasis added*)

Concerning the claimed intended use, Lee, Kang-Hua teaches the following:

Chemical-mechanical **polishing** (CMP) is a planarization technique which was developed to address the problem associated with the difficulty in focusing during a photolithography process for producing integrated circuits due to the difference in the thickness of deposited films. The chemical-mechanical **polishing** technique was first applied to the production of the elements with a size in the order of 0.5 microns. With the reduction in the size of elements, the chemical-mechanical **polishing** technique was applicable to an increased number of layers. Until the elements were developed to be in the order of 0.25 microns, the chemical-mechanical **polishing** became an important and essential planarization technique. In general, the **polishing** method for producing a wire circuit comprises mounting a semiconductor wafer on a spinning platen equipped with an abrasive head and applying an abrasive slurry comprising abrasive particles and chemical additives to the surface of the wafer to enhance the abrasion performance. In fact, the CMP technique is the one which first modifies the surface to be **polished** by changing the chemical properties of the surface and then removes the modified surface in a mechanically abrasive manner. (*emphasis added*)

Concerning the claimed substrate, Lee, Kang-Hua teaches the following:

14. A method for polishing the surface of a **semiconductor** wafer comprising applying a chemical-mechanical abrasive composition as defined in any of claims 1 to 13 to the surface of the **semiconductor** wafer. (*emphasis added*)

Claims 1, 3-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Phelps, Andrew Wells (US20040104377).

Concerning the preferred hydrazine, hydrazide and the formic hydrazide, Phelps, Andrew Wells teaches the following:

[0585] N--O Valence Stabilizer #14: Examples of **hydrazides**, bis(**hydrazides**), and poly(**hydrazides**) (N--O Bidentates and N--O Tetridentates) that meet the requirements for use as "narrow band" valence stabilizers for Ce.sup.+4 include, but are not limited to: **formic hydrazide**; **acetic hydrazide**; **propionic hydrazide**; **benzoic hydrazide**; **phthalhydrazide**; **salicylic hydrazide**; **naphthoic hydrazides**; **norbornaneacetic hydrazide**; **nicotinic hydrazide**; and **isonicotinic hydrazide**

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(isoniazid). [Note: **hydrazides** prefer complexation with lower oxidation states in metal ions.] (*emphasis added*)

Concerning the imine, Phelps, Andrew Wells teaches the following:

[0581] N--O Valence Stabilizer #10: Examples of N-acyl benzyliden**imines**, bis(N-acyl benzyliden**imines**), and poly(N-acyl benzyliden**imines**) (N--O Bidentates and N--O Tetradentates) that meet the requirements for use as "narrow band" valence stabilizers for Ce.sup.+4 include, but are not limited to: N-formyl benzyliden**imine**, N-acetyl benzyliden**imine**; N-benzoyl benzyliden**imine**; and N-pentafluorobenzoyl benzyliden**imine**. (*emphasis added*)

Concerning the hydrazine, Phelps, Andrew Wells teaches the following:

[0115] N Valence Stabilizer #2: Examples of diamines (N--N bidentates) that meet the requirements for use as "wide band" valence stabilizers for Ce.sup.+4 include, but are not limited to: **hydrazine**; phenyl**hydrazine**; 1,1 - diphenyl**hydrazine**; 1,2-diphenyl**hydrazine** (hydrazobenzene); methanedi**amine**; ethylenedi**amine** (1,2-ethanedi**amine**, en); trimethylenedi**amine** (1,3-propanedi**amine**); putrescine (1,4-butanedi**amine**); cadaverine (1,5-pentanedi**amine**); hexamethylenedi**amine** (1,6-hexanedi**amine**); 2,3-diaminobutane; stilbenedi**amine** (1,2-diphenyl-1,2-ethanedi**amine**); cyclohexane-1,2-dia**mine**; cyclopentane-1,2-dia**mine**; 1,3-diazacyclopentane; 1,3-diazacyclohexane; piperaz**ine**; benzopiperaz**ine**; dibenzopiperaz**ine**; naphthopiperaz**ine**; diazep**ine**; thiadiazep**ine**; oxodiazep**ine**; sparteine (lupinid**ine**); 2-(aminomethyl)azacyclohexane; 2-(aminomethyl)piperid**ine**; 2-(aminomethyl)pyrrolid**ine**; 2-(aminomethyl)azetid**ine**; 2-(2-aminoethyl)azirid**ine**; 1,2-diaminobenzene; benzid**ine**; bis(2,2'-piperazino)-1,2-ethene; 1,4-diazabicyclo[2.2.2]octane; naphthylethylenedi**amine**; and 1,2-dianilinoethane. (*emphasis added*)

Concerning the guanidine, Phelps, Andrew Wells teaches the following:

[0374] N Valence Stabilizer #7: Examples of **guanidines**, diguanid**ines**, and polyguanid**ines** (N--N bidentates, N--N tridentates, N--N tetradentates, and N--N hexadentates) that meet the requirements for use as "narrow band" valence stabilizers for Ce.sup.+4 include, but are not limited to: **guanidine**; methylguanid**ine**; ethylguanid**ine**; isopropylguanid**ine**; butylguanid**ine**; benzylguanid**ine**; phenylguanid**ine**; tolylguanid**ine**; naphthylguanid**ine**; cyclohexylguanid**ine**; norbornylguanid**ine**; adamantylguanid**ine**; dimethylguanid**ine**; diethylguanid**ine**; diisopropylguanid**ine**; dibutylguanid**ine**; dibenzylguanid**ine**; diphenylguanid**ine**; ditolylguanid**ine**; dinaphthylguanid**ine**; dicyclohexylguanid**ine**; dinorbornylguanid**ine**; diadamantylguanid**ine**; ethylenediguanid**ine**; propylenediguanid**ine**; tetramethylenediguanid**ine**; pentamethylenediguanid**ine**; hexamethylenediguanid**ine**; heptamethylenediguanid**ine**; octamethylenediguanid**ine**; phenylenediguanid**ine**; piperazinediguanid**ine**; oxalyldiguanid**ine**; malonyldiguanid**ine**; succinyldiguanid**ine**; glutaryldiguanid**ine**; adipyldiguanid**ine**;



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pimelyldiguanidine; suberyldiguanidine; phthalyldiguanidine; benzimidazoleguanidine; aminoguanidine; nitroaminoguanidine; dicyandiamide (cyanoguanidine); dodecylguanidine; and nitrovin. (*emphasis added*)

Concerning the formamidine, Phelps, Andrew Wells teaches the following:

[0169] N Valence Stabilizer #22: Examples of diformamidine oxides (dicarbonimidic diamides), tricarbonimidic diamides, tetracarbonimidic diamides, bis(diformamidine oxides), and poly(diformamidine oxides) (N--N bidentates, N--N tridentates, or N--N tetradentates) that meet the requirements for use as "wide band" valence stabilizers for Ce.sup.+4 include, but are not limited to: diformamidine oxide; methyldiformamidine oxide; ethyldiformamidine oxide; isopropylldiformamidine oxide; butyldiformamidine oxide; benzyldiformamidine oxide; phenyldiformamidine oxide; tolyldiformamidine oxide; naphthylldiformamidine oxide; cyclohexylldiformamidine oxide; norbornylldiformamidine oxide; adamantylldiformamidine oxide; dimethyldiformamidine oxide; diethyldiformamidine oxide; diisopropylldiformamidine oxide; dibutyldiformamidine oxide; dibenzyldiformamidine oxide; diphenylldiformamidine oxide; ditolyldiformamidine oxide; dinaphthylldiformamidine oxide; dicyclohexylldiformamidine oxide; dinorbornylldiformamidine oxide; diadamantylldiformamidine oxide; 2-O-amidinohydroxythiazole; 2-O-amidinohydroxyoxazole; 2-O-amidinohydroxyimidazole; 3-O-amidinohydroxypyrazole; 3-O-amidinohydroxy-1,2,4-triazole; and 5-O-amidinohydroxytetrazole. (*emphasis added*)

Concerning the acetamidine, Phelps, Andrew Wells teaches the following:

[0165] N Valence Stabilizer #18: Examples of amidines and diamidines (N--N bidentates or N--N Tetradentates) that meet the requirements for use as "wide band" valence stabilizers for Ce.sup.+4 include, but are not limited to: N,N'-dimethylformamidine; N,N'-diethylformamidine; N,N'-diisopropylformamidine; N,N'-dibutylformamidine; N,N'-diphenylformamidine; N,N'-dibenzylformamidine; N,N'-dinaphthylformamidine; N,N'-dicyclohexylformamidine; N,N'-dinorbornylformamidine; N,N'-diadamantylformamidine; N,N'-dianthraquinonylformamidine; N,N'-dimethylacetamidine; N,N'-diethylacetamidine; N,N'-diisopropylacetamidine; N,N'-dibutylacetamidine; N,N'-diphenylacetamidine; N,N'-dibenzylacetamidine; N,N'-dinaphthylacetamidine; N,N'-dicyclohexylacetamidine; N,N'-dinorbornylacetamidine; N,N'-diadamantylacetamidine; N,N'-dimethylbenzamidine; N,N'-diethylbenzamidine; N,N'-diisopropylbenzamidine; N,N'-dibutylbenzamidine; N,N'-diphenylbenzamidine; N,N'-dibenzylbenzamidine; N,N'-dinaphthylbenzamidine; N,N'-dicyclohexylbenzamidine; N,N'-dinorbornylbenzamidine; N,N'-diadamantylbenzamidine; N,N'-dimethyltoluamidine; N,N'-diethyltoluamidine; N,N'-diisopropyltoluamidine; N,N'-dibutyltoluamidine; N,N'-diphenyltoluamidine; N,N'-dibenzyltoluamidine; N,N'-dinaphthyltoluamidine;

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N,N'-dicyclohexyltoluamidine; N,N'-dinorbornyltoluamidine; N,N'-diadamantyltoluamidine; oxalic diamidine; malonic diamidine; succinic diamidine; glutaric diamidine; adipic diamidine; pimelic diamidine; suberic diamidine; phthalic diamidine; terephthalic diamidine; isophthalic diamidine; piperazine diamidine; 2-iminopyrrolidine; 2-iminopiperidine; amidinobenzamide; benzamidine; chloroazodin; and debrisoquin. (*emphasis added*)

Concerning the semicarbazide, Phelps, Andrew Wells teaches the following:

[0586] N--O Valence Stabilizer #15: Examples of **semicarbazides**, bis(**semicarbazides**), and poly(**semicarbazides**) (N--O Bidentates, N--O Tetridentates, and N--O Hexadentates) that meet the requirements for use as "narrow band" valence stabilizers for Ce.sup.+4 include, but are not limited to: **semicarbazide** (sc); **semicarbazide** diacetic acid (sda); 1-methyl**semicarbazide**; 1-ethyl**semicarbazide**; 1-isopropyl**semicarbazide**; 1-phenyl**semicarbazide**; 1-benzyl**semicarbazide**; 1-cyclobexyl**semicarbazide**; 1-norbornyl**semicarbazide**; 4-methyl**semicarbazide**; 4-ethyl**semicarbazide**; 4-isopropyl**semicarbazide**; 4-phenyl**semicarbazide**; 4-benzyl**semicarbazide**; 4-cyclohexyl**semicarbazide**; 4-norbornyl**semicarbazide**; nicotinic **semicarbazide**; and isonicotinic **semicarbazide**. [Note: **semicarbazides** prefer complexation with lower oxidation states in metal ions.] (*emphasis added*)

Concerning the claimed intended use, Phelps, Andrew Wells teaches the following:

[0017] Examples of the use of tetravalent cerium oxide pigments include Netherlands Application No. 6,601,070 to Associated Lead Manufacturers Ltd. (see Chemical Abstracts, vol. 65, col. 18303 (1966) (Abstract)) and U.S. Pat. No. 2,763,569 to Bradstreet et al.. In addition, combinations of cerium oxides with transition or alkaline earth metal oxides are described as pigments in U.S. Pat. No. 2,661,336 to Lederer and U.S. Pat. No. 5,389,402 Speer et al., European Application No. EP 0 803 471 A2 to Degussa Aktiengesellschaft, and U.S. application Publication Ser. No. 2002/0,034,644 A1 by Swiler et al. The pigments are described as being colorants or **polishing** additives. (*emphasis added*)

Concerning the claimed substrate, Phelps, Andrew Wells teaches the following:

95. The method of claim 77 wherein the substrate is selected from metals, semimetals, **semiconductors**, composite materials with anisotropic electrical conductivity, or materials in a conductive or dielectric medium. (*emphasis added*)

Claims 1, 3-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Skee, David C. (US6465403).

Concerning the hydrazine, Skee, David C. teaches the following:

Referring to Table 27, the data shows that other small molecules were ineffective for titanium residue removal. Like hydroxylamine, **hydrazine** is a powerful

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reducing agent. Hydrazine's lack of effectiveness was unexpected and demonstrates the uniqueness of hydroxylamine and hydrogen peroxide for enabling the titanium containing residues found in wafer sample #11 to be cleaned from the vias using silicate-containing formulations. (*emphasis added*)

Concerning the guanidine, Skee, David C. teaches the following:

Other bases that will function in the present invention include ammonium hydroxide, organic amines particularly alkanolamines such as 2-aminoethanol, 1-amino-2-propanol, 1-amino-3-propanol, 2-(2-aminoethoxy)ethanol, 2-(2-aminoethylamino)ethanol, 2-(2-aminoethylamino)ethylamine and the like, and other strong organic bases such as **guanidine**, 1,3-pentanediamine, 4-aminomethyl-1,8-octanediamine, aminoethylpiperazine, 4-(3-aminopropyl)morpholine, 1,2-diaminocyclohexane, tris(2-aminoethyl)amine, 2-methyl-1,5-pentanediamine and hydroxylamine. Alkaline solutions containing metal ions such as sodium or potassium may also be operative, but are not preferred because of the possible residual metal contamination that could occur. Mixtures of these additional alkaline components, particularly ammonium hydroxide, with the aforementioned tetraalkyl ammonium hydroxides are also useful. (*emphasis added*)

Concerning the claimed intended use and the claimed substrate, Skee, David C. teaches the following:

The method of the present invention is very effective for cleaning **semiconductor** wafer substrates that have been previously oxygen plasma ashed to remove bulk photoresist, particularly wafer substrates containing a silicon, silicon oxide, silicon nitride, tungsten, tungsten alloy, titanium, titanium alloy, **tantalum**, **tantalum** alloy, copper, copper alloy, aluminum or aluminum alloy film. The method removes unwanted metallic and organic contaminants but does not cause unacceptable corrosion to the silicon, silicon oxide, silicon nitride, tungsten, tungsten alloy, titanium, titanium alloy, **tantalum**, **tantalum** alloy, copper, copper alloy, aluminum or aluminum alloy film. (*emphasis added*)

11.

Claims 1, 3-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujisue, Masaya (US5885362).

Concerning the hydrazine, hydrazide and the semicarbazide, Fujisue, Masaya teaches the following:

As **hydrazines** and **hydrazides** of azobenzene, azotoluene, Methyl Red, azobenzene dicarboxylic acid, hydroxyazobenzene, azoxybenzene and the like: azo and azoxy compounds including phenyl**hydrazine**, p-bromophenyl**hydrazine**, p-nitrophenyl**hydrazine**, N',-phenylacetoh**hydrazide** and the like; hyrazo compounds including hydrazobenzene, hydrazodibenzoic acid and the like; hydrazones including oxalic bis(salicylidene**hydrazide**),

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salicylaldehyde (2-carboxyphenyl)hydrazone, benzaldehyde hydrazone, acetaldehydephenylhydrazone and the like; azines including benzylideneazine and the like; azides including benzoylazide and the like; diazonium salts including benzene diazonium chloride and the like; diazo compounds including benzenediazohydroxide and the like; **semicarbazides** including **semicarbazide** and the like; and **thiosemicarbazides** including **thiosemicarbazide** and the like. (*emphasis added*)

Concerning the claimed intended use, Fujisue, Masaya teaches the following:

In the present invention, the surface treatment generally refers to cleaning, etching, **polishing** and coating of a substrate, and the surface treatment composition generally refers to a surface treating agent used for these purposes. (*emphasis added*)

Concerning the claimed substrate, Fujisue, Masaya teaches the following:

The surface treatment composition of the present invention is used for surface treatment operations including cleaning, etching, polishing, film-forming and the like, for substrates such as **semiconductor**, metal, glass, ceramics, plastic, magnetic material, superconductor and the like, the metal impurity contamination of which becomes troublesome. The present invention is preferably applied particularly to cleaning or etching of a **semiconductor** substrate, the surface of which is demanded to be highly clean. Among the cleaning operations of **semiconductor** substrate, when the present invention is applied particularly to alkali cleaning with a cleaning solution comprising (ammonia+hydrogen peroxide+water), the problem of said cleaning method, i.e. the problem of metal impurity deposition on a substrate can be solved, and by this cleaning, there can be satisfactorily provided a highly clean substrate surface without being contaminated with particles, organic materials and metals. (*emphasis added*)

12.

Claims 1, 3-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Aonuma, Masashi (US4253886).

Concerning the preferred imines and the guanidine, Aonuma, Masashi teaches the following:

Specific examples of volatile corrosion inhibitors of this invention are dicyclohexylamine nitrite, dicyclohexylamine caprylate, dicyclohexylamine carbamate, dicyclohexylamine chromate, cyclohexylamine carbonate, cyclohexylamine nitrite, cyclohexylamine formate, cyclohexylamine adipate, cyclohexylamine chromate, diisopropylamine nitrite, monoethanolamine benzoate, monoethanolamine phthalate, diethanolamine phosphate, diethanolamine sulfonate, triethanolamine nitrite, hexylmethylenediamine caprylate, cyclohexylhydroxylamine chromate, dicyandiamine nitrite, nitronaphthylamine nitrite, hexamethylenediamine carbonate, propylenediamine stearate, xylylenediamine propionate, piperazine caprylate, morpholine laurate,

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morpholine stearate, **guanidine** carbonate, **guanidine** nitrate, **guanidine** propionate, **guanidine hydrochloride**, **guanidine** chromate, **guanidine** sulfate and **guanidine** picrate. (*emphasis added*)

Concerning the imine, Aonuma, Masashi teaches the following:

Examples of volatile corrosion inhibitors are inorganic or organic acid salts of hydrocarbons containing at least one nitrogen atom (N) in the form of an amine or **imine**, i.e., amine, amide, imide and other aliphatic (straight or branches cyclic, heterocyclic or aromatic series materials. The amine moiety can be present in the form of an amino group, an amido group, an imido group, or the like. (*emphasis added*)

Concerning the hydrazine, Aonuma, Masashi teaches the following:

More specifically, those ferromagnetic metal powders produced by reducing a metal salt capable of forming a ferromagnetic metal powder with, as a reducing agent, an acid containing a phosphinate (hypophosphite ion) ion or a salt thereof; a boron hydride compound such as sodium borohydride, diethylamine borane, methyl diborane, and the like or the derivatives thereof; **hydrazine** and its derivatives; and metal powders such as Mg, Ca, Al, etc., can be used. If a phosphinic acid ion-containing acid or a salt thereof is used as the reducing agent, phosphorus, P, is incorporated into the ferromagnetic metal powder formed in a proportion of about 0.1 to 10% by weight during the course of the reaction. In the case of the boron hydride compounds or the derivatives thereof, boron, B, is incorporated into the ferromagnetic metal powder in a proportion of about 0.1 to 10% by weight during the course of the reaction. (*emphasis added*)

### ***Conclusion***

The applicant's claim 1 requires one and only one compound. Instant claim 1 does not recite any specific weight percentage. Read broadly, the examiner could recite any compound meeting formula I or II from a chemical catalog and make the 102 rejection. For example, Sigma Chemical Company in 1991 sold 100% hydrazine. The applicant's claim 1 is so broad that a teaching from a catalog would clearly anticipate the claim.

It is suggested that the applicant more clearly define the compositions material limitations and not focus on the intended use.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325.

The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglass McGinty can be reached on (571)272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'G. Webb', with a large, stylized loop at the end.

Gregory E. Webb  
Primary Examiner  
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gew